

WHAT IS CLAIMED IS:

1. An Automatic Gain Control method, comprising:
 - (a) amplifying an input signal using a plurality of parallel gain stages to produce an output signal, a gain of the amplification being a sum of gains of the plurality of gain stages;;
 - (b) determining if a power of the output signal is between a high threshold and a low threshold; and
 - (c) changing the gain of the amplification so as to drive the power to be between the high and low thresholds when the power is not between the high and low thresholds.
2. The method of claim 1, wherein step (c) comprises changing the gain of the amplification until the power crosses the target threshold.
3. The method of claim 1, further comprising not changing the gain of the amplification when the power is determined to be between the high and low thresholds.
4. The method of claim 1, further comprising repeating steps (b) and (c) at predetermined time intervals.
5. The method of claim 1, wherein step (c) comprises changing the gain of the amplification according to a ramp function.
6. The method of claim 1, wherein step (c) comprises changing the gain of the amplification smoothly and continuously according to a ramp function.
7. The method of claim 1, wherein step (a) comprises amplifying the input signal with a variable gain stage only.

8. The method of claim 1, wherein:
 - step (a) comprises amplifying the input signal with a variable gain stage and a fixed gain stage; and
 - step (c) comprises changing the gain of the amplification only.
9. The method of claim 1, wherein step (c) comprises:
 - decreasing the gain of the amplification when the power is above the high threshold; and
 - increasing the gain of the amplification when the power is below the low threshold.
10. The method of claim 1, wherein the input signal includes multiple frequency channels, and the output signal includes the multiple frequency channels, and wherein step (b) includes detecting a combined power of the multiple frequency channels in the output signal.
11. The method of claim 1, wherein the input signal is a television signal.
12. The method of claim 1, wherein the plurality of gain stages includes gain stages with progressively decreasing maximum gain.
13. The method of claim 1, wherein the plurality of gain stages includes attenuators that are shared between stages.
14. The method of claim 1, wherein the plurality of gain stages are arranged in a ladder.
15. The method of claim 1, wherein the plurality of parallel gain stages form a Variable Gain Amplifier, and the Variable Gain Amplifier includes a resistor ladder to provide fixed voltage references for the plurality of gain stages.

16. The method of claim 1, wherein the plurality of parallel gain stages form a Variable Gain Amplifier, and the Variable Gain Amplifier includes cascaded attenuators.

17. An Automatic Gain Control system, comprising:

a plurality of parallel gain stages configured to amplify an input signal and having a gain that is a sum of gains of the individual of gain stages, so as to produce an amplified signal;

a comparator module configured to compare a power of the amplified signal to a high threshold, a low threshold, and a target threshold between the high and low thresholds; and

a controller module configured to change the gain, based on the comparison, so as to drive the power towards the target threshold.

18. The system of claim 17, wherein the controller module is configured to change the gain until the comparator module indicates that the power crosses the target threshold.

19. The system of claim 17, wherein the controller module is configured to not change the gain when the comparator module indicates the power is between the high and low thresholds.

20. The system of claim 17, wherein the comparator module and controller module repeat their respective functions at predetermined time intervals.

21. The system of claim 17, further comprising a ramp generator configured to generate a ramp signal, wherein the controller module changes the gain as a function of the ramp signal.

22. The system of claim 21, wherein the gain change is smooth and continuous responsive to the ramp signal.

23. The system of claim 17, wherein the plurality of gain stages include gain stages with progressively decreasing maximum gain.

24. The system of claim 17, further comprising a fixed gain amplifier following the plurality of gain stages, the power being detected at an output of the fixed gain amplifier.

25. The system of claim 17, wherein the controller module is configured to:

decrease the gain when the comparator module indicates that the power is above the high threshold; and

increase the gain when the comparator module indicates that the power is below the low threshold.

26. The system of claim 17, wherein the input signal includes multiple frequency channels, and the amplified signal includes the multiple frequency channels, and wherein the detector is configured to detect a combined power of the multiple frequency channels in the amplified signal.

27. The system of claim 17, wherein the input signal is a television signal.

28. The system of claim 17, wherein the plurality of gain stages includes gain stages with progressively decreasing maximum gain.

29. The system of claim 17, wherein the plurality of gain stages includes attenuators that are shared between stages.

30. The system of claim 17, wherein the plurality of gain stages are arranged in a ladder.

31. The system of claim 17, wherein the plurality of gain stages includes a resistor ladder to provide fixed voltage references to the plurality of gain stages.

32. The system of claim 17, wherein the plurality of gain stages includes cascaded attenuators.